

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please amend the claims as follows:

1. (Currently Amended) A method for creating a bundle of soft permanent virtual circuits (SPVCs) coupling from a source end to a destination end via a communication network, the method comprising:

creating an SPVC bundle for the source end, the SPVC bundle comprising a plurality of member SPVCs, each member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC), each of the member SPVCs being associated with a respective connection characteristic and coupling to a same destination, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination end;

transmitting, from the source end to the destination end, an SPVC setup message containing configuration information of the SPVC bundle, the configuration information comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails; and

associating each of the member SPVCs with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate from the source end to the destination end.

2. (Original) The method in accordance with claim 1, further comprising:
receiving parameters defining the SPVC bundle at the source end, the configuration information transmitted to the destination end corresponding to the parameters.

3. (Original) The method in accordance with claim 1, further comprising:
automatically creating, at the destination end, in response to the SPVC setup message, the SPVC bundle for the destination end in accordance with the configuration information.

4. (Previously Presented) The method in accordance with claim 1, wherein the respective connection characteristic comprises at least one of:
a traffic parameter.

5. (Original) The method in accordance with claim 1, wherein the configuration information comprises:
bundle-level parameters; and
parameters for individual member SPVCs.

6. (Previously Presented) The method in accordance with claim 5, wherein the bundle-level parameters comprises:
network service access point (NSAP) address;
encapsulation parameters; and
address map parameters.

7. (Previously Presented) The method in accordance with claim 5, wherein the parameters for individual member SPVCs comprise at least one of:
traffic parameters; and
VPI/VCI values.

8. (Original) The method in accordance with claim 7, wherein the parameters for individual member SPVCs further comprise at least one of:

Internet Protocol (IP) precedence levels; and
parameters specifying bumping rules.

9. (Cancelled)

10. (Previously Presented) The method in accordance with claim 1, wherein the transmitting comprising:

signalling the SPVC setup message containing the SPVC bundle information using the Generic Application Transport information element (GAT IE).

11. (Currently Amended) A method for creating, at a destination network device, a bundle of soft permanent virtual circuits (SPVCs) coupling from a source network device to the destination network device via a communications network, the method comprising:

receiving and decoding an SPVC setup message containing SPVC bundle information for creating an SPVC bundle coupled from a specified source end, the SPVC bundle comprising a plurality of member SPVCs, each of the member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC);

extracting parameters from the SPVC bundle information, the parameters comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails; and

creating the SPVC bundle based on the extracted parameters, each of the member SPVCs being associated with a respective connection characteristic and coupled from the specified source end, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination network device, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate ~~form~~ from the source end to the destination end.

12. (Original) The method in accordance with claim 11, wherein the parameters comprising:

bundle-level parameters; and

parameters for individual member SPVCs.

13. (Previously Presented) The method in accordance with claim 12, wherein the bundle-level parameters comprises:

network service access point (NSAP) address;
encapsulation parameters; and
address map parameters.

14. (Previously Presented) The method in accordance with claim 12, wherein the parameters for individual member SPVCs comprise at least one of:

traffic parameters; and
VPI/VCI values.

15. (Original) The method in accordance with claim 14, wherein the parameters for individual member SPVCs further comprise at least one of:

Internet Protocol (IP) precedence levels; and
parameters specifying bumping rules.

16. (Original) The method in accordance with claim 11, wherein each of the member SPVCs is associated with an Internet Protocol (IP) precedence level.

17. (Original) The method in accordance with claim 11, wherein the SPVC setup message containing the SPVC bundle information is transmitted using the Generic Application Transport information element (GAT IE).

18. (Original) The method in accordance with claim 11, further comprising:
allocating a PVC connection and an SVC connection on the destination network device for each member SPVC.

19. (Currently Amended) A network device for creating a bundle of soft permanent virtual circuits (SPVCs) coupling from a source end to a destination end via a communications network, the network device comprising:

an interface adapted to receive commands and parameters to create an SPVC bundle comprising a plurality of member SPVCs, each of the member SPVCs comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC);

an SPVC bundle manager coupled to the interface, adapted to configure the SPVC bundle in accordance with the parameters, each of the member SPVCs being associated with a respective connection characteristic and coupling to a same destination, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination end;

an SPVC manager coupled to the SPVC bundle manager, adapted to create an SPVC bundle setup request and SPVC bundle information based on data received from the SPVC bundle manager; and

a signalling module coupled to the SPVC manager, adapted to encode and transmit an SPVC setup message containing the SPVC bundle information, the bundle information comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate from the source end to the destination end.

20. (Original) The network device in accordance with claim 19, wherein the SPVC bundle information comprises:

bundle-level parameters; and
parameters for individual member SPVCs.

21. (Previously Presented) The network device in accordance with claim 20, wherein the bundle-level parameters comprises:

network service access point (NSAP) address;
encapsulation parameters; and
address map parameters.

22. (Previously Presented) The network device in accordance with claim 20, wherein the parameters for individual member SPVCs comprise at least one of:

traffic parameters; and
VPI/VCI values.

23. (Original) The network device in accordance with claim 22, wherein the parameters for individual member SPVCs further comprise at least one of:

Internet Protocol (IP) precedence levels; and
parameters specifying bumping rules.

24. (Previously Presented) The network device in accordance with claim 19, wherein the SPVC bundle manager is further adapted to associate each of the member SPVCs with a respective Internet Protocol (IP) precedence level.

25. (Previously Presented) The network device in accordance with claim 19, wherein the signaling module transmits the SPVC setup message containing the SPVC bundle information using the Generic Application Transport information element (GAT IE).

26. (Previously Presented) The network device in accordance with claim 19, further comprising:

a connection manager coupled to the SPVC bundle manager, adapted to allocate a PVC connection and an SVC connection on the network device for each of the member SPVCs.

27. (Currently Amended) A network device for a destination end of a bundle of soft permanent virtual circuits (SPVCs) coupling from a source end to the destination end via a communications network, the network device comprising:

a signalling module adapted to receive and decode an SPVC setup message containing SPVC bundle information for creating an SPVC bundle coupled from a specified source end, the SPVC bundle comprising a plurality of member SPVCs, each of the member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC), the bundle information comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails; and

an SPVC bundle manager adapted to extract parameters from the SPVC bundle information and to create the SPVC bundle, each of the member SPVCs being associated with a respective connection characteristic and coupled from the specified source end, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination end, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate from the source end to the destination end.

28. (Original) The network device in accordance with claim 27, wherein the parameters comprising:

bundle-level parameters; and
parameters for individual member SPVCs.

29. (Previously Presented) The network device in accordance with claim 28, wherein the bundle-level parameters comprises:

network service access point (NSAP) address;
encapsulation parameters; and
address map parameters.

30. (Previously Presented) The network device in accordance with claim 28, wherein the parameters for individual member SPVCs comprise at least one of:

traffic parameters; and
VPI/VCI values.

31. (Original) The network device in accordance with claim 30, wherein the parameters for individual member SPVCs further comprise at least one of:

Internet Protocol (IP) precedence levels; and
parameters specifying bumping rules.

32. (Original) The network device in accordance with claim 27, wherein each of the member SPVCs is associated with an Internet Protocol (IP) precedence level.

33. (Original) The network device in accordance with claim 27, wherein the SPVC setup message containing the SPVC bundle information is transmitted using the Generic Application Transport information element (GAT IE).

34. (Previously Presented) The network device in accordance with claim 27, further comprising:

a connection manager coupled to the SPVC bundle manager, adapted to allocate a PVC connection and an SVC connection on the destination network device for each member SPVC.

ATTORNEY DOCKET NO.
CISCO-7639 (032590-0219)
Confirmation No. 2447

PATENT APPLICATION
10/698,807

35. (Currently Amended) A system for creating a bundle of soft permanent virtual circuits (SPVCs) coupling from a source end to a destination end via a communications network, the system comprising:

a source network device, comprising:

an interface adapted to receive commands and parameters to create an SPVC bundle comprising a plurality of member SPVCs, each of the member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC), the parameters comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails;

a first SPVC bundle manager coupled to the interface, adapted to configure an SPVC bundle to a specified destination bundle based on the parameters, each of the member SPVCs being associated with a respective connection characteristic and coupling to a same destination;

a first SPVC manager coupled to the first SPVC bundle manager, adapted to create an SPVC bundle setup request and SPVC bundle information based on data received from the first SPVC bundle manager; and

a first signalling module coupled to the first SPVC manager, adapted to encode and transmit an SPVC setup message containing the SPVC bundle information; and

a destination network device, comprising:

a second signalling module adapted to receive and decode the SPVC setup message containing the SPVC bundle information; and

a second SPVC bundle manager, adapted to extract parameters from the SPVC bundle information to configure the SPVC bundle and create the member SPVCs for the destination end, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination end, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and

wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate form from the source end to the destination end.

36. (Original) The system in accordance with claim 35, wherein the SPVC bundle information comprising:

bundle-level parameters; and
parameters for individual member SPVCs.

37. (Previously Presented) The system in accordance with claim 36, wherein the bundle-level parameters comprises:

network service access point (NSAP) address;
encapsulation parameters; and
address map parameters.

38. (Previously Presented) The system in accordance with claim 36, wherein the parameters for individual member SPVCs comprise at least one of:

traffic parameters; and
VPI/VCI values.

39. (Original) The system in accordance with claim 38, wherein the parameters for individual member SPVCs further comprise at least one of:

Internet Protocol (IP) precedence levels; and
parameters specifying bumping rules.

40. (Previously Presented) The system in accordance with claim 35, wherein the first SPVC bundle manager is further adapted to associate each of the member SPVCs with an Internet Protocol (IP) precedence level.

41. (Previously Presented) The system in accordance with claim 35, wherein the first signaling module transmits the SPVC setup message containing the SPVC bundle information to the second signaling module using the Generic Application Transport information element (GAT IE).

42. (Previously Presented) The system in accordance with claim 35, wherein the source network device further comprises:

a first connection manager coupled to the first SPVC bundle manager, adapted to allocate a PVC connection and an SVC connection on the source network device for each member SPVC.

43. (Previously Presented) The system in accordance with claim 35, wherein the destination network device further comprises:

a second connection manager coupled to the second SPVC bundle manager, adapted to allocate a PVC connection and an SVC connection on the destination network device for each member SPVC.

44. (Currently Amended) An Apparatus for creating a bundle of soft permanent virtual circuits (SPVCs) coupling from a source end to a destination end via a communications network, the apparatus comprising:

means for creating an SPVC bundle for the source end, the SPVC bundle comprising a plurality of member SPVCs, each member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC), each of the member SPVCs being associated with a respective connection characteristic and coupling to a same destination, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination end; and

means for transmitting, from the source end to the destination end, an SPVC setup message containing configuration information of the SPVC bundle, the configuration information comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate ~~form~~ from the source end to the destination end.

45. (Original) The apparatus in accordance with claim 44, further comprising:

means for receiving parameters defining the SPVC bundle at the source end, the configuration information transmitted to the destination end corresponding to the parameters.

46. (Original) The apparatus in accordance with claim 44, wherein the configuration information comprises:

bundle-level parameters; and
parameters for individual member SPVCs.

47. (Original) The apparatus in accordance with claim 44, further comprising:
means for associating each of the member SPVCs with a respective Internet Protocol (IP)
precedence level.

48. (Previously Presented) The apparatus in accordance with claim 44, wherein the
means for transmitting comprising:
means for signalling the SPVC setup message containing the SPVC bundle information
using the Generic Application Transport information element (GAT IE).

49. (Currently Amended) A apparatus for creating, at a destination end, a bundle of soft permanent virtual circuits (SPVCs) coupling from a source end to the destination end via a communications network, the apparatus comprising:

means for receiving and decoding an SPVC setup message containing SPVC bundle information for creating an SPVC bundle coupled from a specified source end, the SPVC bundle comprising a plurality of member SPVCs, each of the member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC);

means for extracting parameters from the SPVC bundle information, the parameters comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails; and

means for creating the SPVC bundle based on the extracted parameters, each of the member SPVCs being associated with a respective connection characteristic and coupled from the specified source end, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination end, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate ~~form~~ from the source end to the destination end.

50. (Original) The apparatus in accordance with claim 49, wherein the parameters comprising:

bundle-level parameters; and
parameters for individual member SPVCs.

51. (Original) The apparatus in accordance with claim 49, wherein the SPVC setup message containing the SPVC bundle information is transmitted using the Generic Application Transport information element (GAT IE).

52. (Original) The apparatus in accordance with claim 49, further comprising:
means for allocating a PVC connection and an SVC connection on the destination network device for each member SPVC.

53. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for creating a bundle of soft permanent virtual circuits (SPVCs) coupling from a source end to a destination end via a communications network, the method comprising:

creating an SPVC bundle for the source end, the SPVC bundle comprising a plurality of member SPVCs, each member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC), each of the member SPVCs being associated with a respective connection characteristic and coupling to a same destination; and

transmitting, from the source end to the destination end, an SPVC setup message containing configuration information of the SPVC bundle, the configuration information comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination end, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate ~~form~~ from the source end to the destination end.

54. (Previously Presented) The program storage device in accordance with claim 53, wherein the method further comprises:

receiving parameters defining the SPVC bundle at the source end, the configuration information transmitted to the destination end corresponding to the parameters.

55. (Original) The program storage device in accordance with claim 53, wherein the configuration information comprises:

bundle-level parameters; and
parameters for individual member SPVCs.

56. (Previously Presented) The program storage device in accordance with claim 53, wherein the method further comprises:

associating each of the member SPVCs with a respective Internet Protocol (IP) precedence level.

57. (Previously Presented) The program storage device in accordance with claim 53, wherein the transmitting comprising:

signalling the SPVC setup message containing the SPVC bundle information using the Generic Application Transport information element (GAT IE).

58. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for creating, at a destination network device, a bundle of soft permanent virtual circuits (SPVCs) coupling from a source network device to the destination network device via a communications network, the method comprising:

receiving and decoding an SPVC setup message containing SPVC bundle information for creating an SPVC bundle coupled from a specified source end, the SPVC bundle comprising a plurality of member SPVCs, each of the member SPVC comprising a permanent virtual circuit (PVC) and a switched virtual circuit (SVC);

extracting parameters from the SPVC bundle information, the parameters comprising bumping rules for individual member SPVCs, the bumping rules specifying to which member SPVC traffic should be bumped when a specific member SPVC fails; and

creating the SPVC bundle based on the extracted parameters, each of the member SPVCs being associated with a respective connection characteristic and coupled from the specified source end, wherein each of the connection characteristics includes a respective quality of service (QoS) parameter that is maintained as Internet Protocol (IP) packets propagate from the source end, over the communication network, and to the destination network device, wherein each of the member SPVCs are associated with a respective Internet Protocol (IP) precedence level, and wherein a first precedence level is used for an unspecified bit rate (UBR), a second precedence level is used for video data, and a third precedence level is used for voice data, the precedence levels being used in bumping rules for the IP packets such that the QoS parameter is maintained as the IP packets propagate from the source end to the destination end.

59. (Original) The program storage device in accordance with claim 58, wherein the parameters comprising:

bundle-level parameters; and
parameters for individual member SPVCs.

60. (Original) The program storage device in accordance with claim 58, wherein the SPVC setup message containing the SPVC bundle information is transmitted using the Generic Application Transport information element (GAT IE).

61. (Previously Presented) The program storage device in accordance with claim 58, wherein the method further comprises:

allocating a PVC connection and an SVC connection on the destination network device for each member SPVC.